

# Treatment of Dengue

## Isotonic Solutions or Colloids?

Based on the three randomized controlled trials comparing the different fluid resuscitation regimes among children with dengue shock syndrome, there is no clear advantage to the use of colloids over crystalloids in terms of hospital stay and mortality. Colloids, however, might be the preferred choice if the blood pressure has to be restored urgently (e.g., in those with pulse pressure < 10 mm Hg). Colloids have been shown to restore the cardiac index and reduce the level of hematocrit faster than crystalloids in dengue patients with intractable shock<sup>1-3</sup>.

An ideal intravenous fluid for patients with dengue is one that is isotonic. However, even isotonic crystalloid solutions have their limitations when used in large quantities. Therefore it is advisable to understand the limitations of these solutions to avoid complications. For example, repeated large volumes of 0.9% normal saline might lead to hyperchloremic acidosis which might aggravate or be confused with lactic acidosis from prolonged shock. Monitoring the chloride and lactate levels will help to identify this problem. When serum chloride level exceeds the normal range, it is advisable to change to other alternatives such as Ringer's Lactate which has a lower sodium and chloride content. Ringer's Acetate should be considered instead of Ringer's Lactate in dengue patients with significant liver involvement or failure and in patients with impaired lactate metabolism.

There are several types of colloid solutions including albumin, gelatin-based solutions, dextran, and starches. One of the biggest concerns regarding their use is their impact on coagulation. Theoretically, dextrans bind to von Willebrand factor/Factor VIII complex and impair coagulation the most. This was not observed to have clinical significance, however, in fluid resuscitation in dengue shock. Of all the colloids, gelatin has the least effect on coagulation but the highest risk of allergic reactions including fever, chills and rigors. Allergic reactions are also known to occur with dextran 70 solutions, and dextran 40 can potentially cause osmotic renal injury in patients who are hypovolemic.

## References

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2. Ngo NT, Cao XT, Kneen R. Clin Infect Dis, 2001, 32:204–213.
3. Wills BA et al. N Engl J Med, 2005, 353:877–889.

